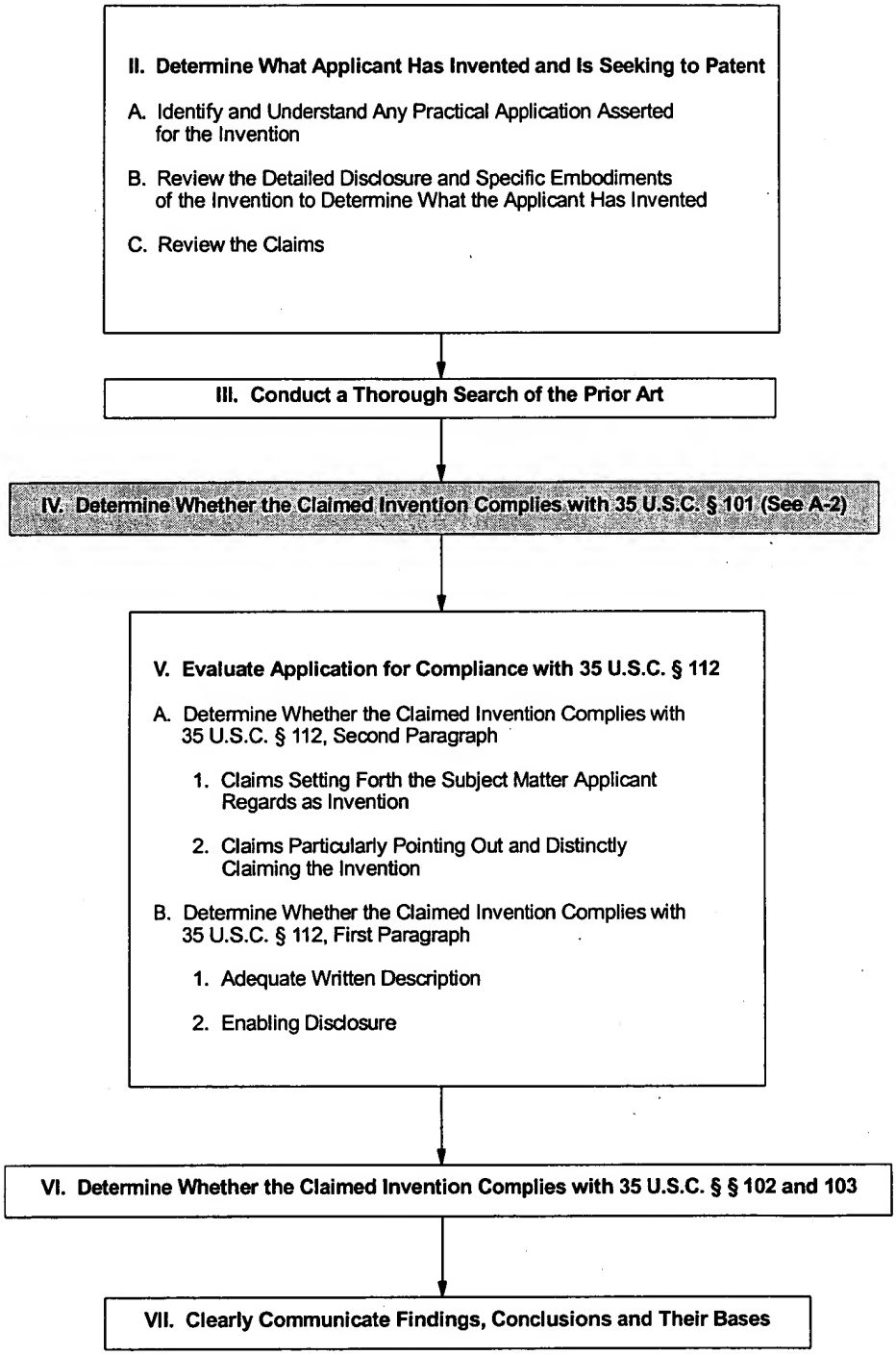
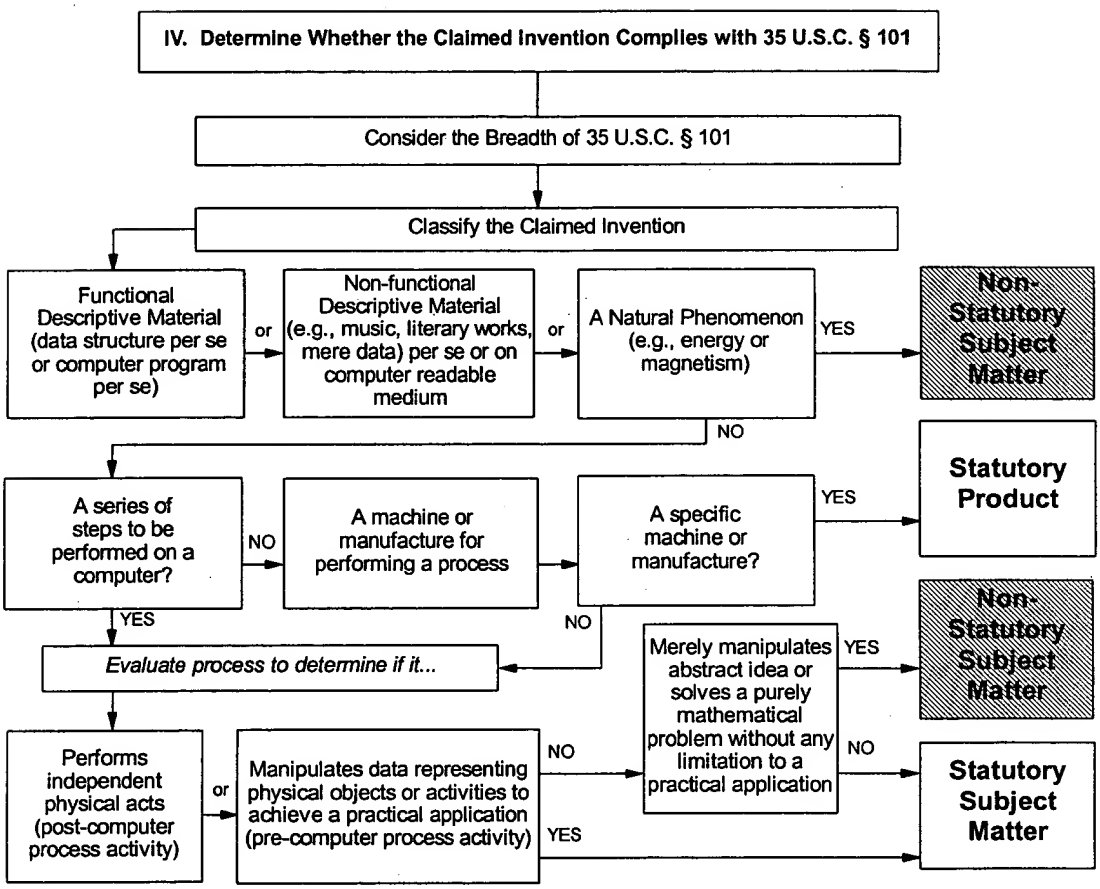
APPENDIX

Computer-Related Inventions




IV. Determine Whether the Claimed Invention Complies with 35 U.S.C. § 101
Consider the Breadth of 35 U.S.C. § 101
Classify the Claimed Invention
Functional Descriptive Material (data structure per se or computer program per se)
or
Non-functional Descriptive Material (e.g., music, literary works, mere data) per se or on computer readable medium
or
A Natural Phenomenon (e.g., energy or magnetism)
YES
Non-Statutory Subject Matter
NO
A series of steps to be performed on a computer?
NO
A machine or manufacture for performing a process
A specific machine or manufacture?
YES
Statutory Product
YES
NO
Evaluate process to determine if it...
Merely manipulates abstract idea or solves a purely mathematical problem without any limitation to a practical application
YES
Non-Statutory Subject Matter
Performs independent physical acts (post-computer process activity)
or
Manipulates data representing physical objects or activities to achieve a practical application (pre-computer process activity)
NO
NO
Statutory Subject Matter
YES

Computer Program Product Claims

Stephen G. Kunin
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U.S. Patent & Trademark Office

PRESENTED AT THE PARTNERS IN PATENTS IV CONFERENCE, U.S.A, HELD IN REDMOND OCT. 22, 1996 AND MAY 16, 2000.

Topics

- Examination Guidelines for Computer-Related Inventions
- *In re Lowry*
- Signal Claims
- Computer-Readable Medium Issues

Examination Guidelines for Computer-Related Inventions

A claimed computer-readable medium encoded with a computer program defines structural and functional interrelationships between the computer program and the medium which permits the computer program's functionality to be realized, and is thus statutory.

In re Lowry

- *In re Lowry*, 32 USPQ2d 1031 (Fed. Cir. 1994)
  - Patent Application of Edward S. Lowry
  - Serial no. 07/181,105
  - Title: Data Processing System Having a Data Structure
  - Relates to storage, use, and management of information residing in a computer memory
  - Claim to data structure that increases computer efficiency held statutory

In re Lowry (Continued)

- Distinguishable from printed matter cases
  - Printed matter cases "dealt with claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." (*In re Bernhart*, 417 F.2d 1395, 1399, 163 USPQ 611, 615 (CCPA 1969))
  - Printed matter cases have no factual relevance where "the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer"
- Lowry's data structures
  - According to Lowry, greatly facilitate data management by data processing systems
  - Are processed by a machine
  - Not accessible other than through sophisticated software systems. Printed matter cases have no factual relevance here.

In re Lowry (Continued)

- Lowry's claims define functional characteristics of the memory.
- Contrary to the PTO's assertion, Lowry does not claim merely the information content of a memory.
- Lowry's data structures, while including data resident in a database, depend only functionally on information content.
- While the information content affects the exact sequence of bits stored in accordance with Lowry's data structures, the claims require specific electronic structural elements which impart a physical organization on the information stored in memory.
- Lowry's invention manages information.
- As Lowry notes, the data structures provide increased computing efficiency.

In re Lowry (Continued)

- More than mere abstraction, the data structures are specific electrical or magnetic structural elements in a memory.
- According to Lowry, the data structures provide tangible benefits:
  - Data stored in accordance with the claimed data structures are more easily accessed, stored, and erased
- Lowry further notes that, unlike prior art data structures, Lowry's data structures simultaneously represent complex data accurately and enable powerful nested operations.
- In short, Lowry's data structures are physical entities that provide increased efficiency in computer operation. They are not analogous to printed matter.

Signal Claims

- Does PTO grant patents on signal claims?
  - Koo patent
    - *U.S. Patent Number:* 5,568,202
    - *Title:* System for Echo Cancellation Comprising an Improved Ghost Cancellation Reference Signal
    - *Inventor:* David Koo
    - *Assignee:* North American Philips Corporation
  - Claim:
    - An electronic reference signal in a system for minimizing the effects of ghosts occurring during the transmission and reception of a television signal over a communications path, wherein said reference signal is embodied in a processor readable memory, is non-cyclic, has a substantially flat frequency response within the bandwidth of said communications path and has a plurality of substantially uniform amplitude peaks over a time interval, and wherein a replica of said reference signal is transmitted as part of said television signal and is utilized by a decoder to derive coefficients which are used with at least one filter to remove said ghosts.

Signal Claims (Continued)

- Prosecution History of Koo Patent
  - Board of Patent Appeals and Interferences affirmed examiner's rejection of two-hump signal claims as being non-statutory under Section 101.
  - Koo appealed to the Federal Circuit
  - Case remanded to PTO to permit Koo to amend claims to incorporate signal in computer-readable memory

Signal Claims (Continued)

- Signal claims are:
  - Not disembodied software inventions (*In re Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760)
  - No more ephemeral than element 95 patented in 1964
    - Seaborg patent
      - *U.S. Patent Number:* 3,156,523
      - *Title:* Element 95 and Method of Producing Said Element
      - *Inventor:* Glenn T. Seaborg
      - Assignor to the United States of America as represented by the United States Atomic Energy Commission (now Department of Energy (DOE))

Signal Claims (Continued)

- Note *In re Breslow*, 205 USPQ 221 (CCPA 1980)
  - Patent Application of David S. Breslow
  - Serial no. 646,309
  - Title: Nitrile Imines
  - New compounds claimed, polyfunctional nitrile imines, were one aspect of a broader invention described in Serial no. 3,418,285, relating to new cross-linking agents, to cross-linking unsaturated polymers, and to cross-linked products so produced. Generally any type of unsaturated polymer, containing ethylenic unsaturation wherein there is at least one hydrogen radical attached to at least one of the carbon atoms of the double bond, can be cross-linked with polyfunctional nitrile imines and that the resulting cross-linked polymers are hard, tough rubbers, substantially insoluble in water and hydrocarbon solvents with improved tensile properties useful in various rubber applications.

Signal Claims (Continued)

- *In re Breslow*, 205 USPQ 221 (CCPA 1980)
  - The issue:
    - Are the claimed compounds, which the board admitted in fact do exist and can be produced according to the description of appellant's specification, excluded from the category of "composition of matter" in Section 101 because they are transitory, unstable, and non-isolatable in what the board called a "reasonably *stable* form"?
  - Decision:
    - CCPA held that an intermediate product that exists only as a transitory composition of matter when making a final product was patentable subject matter.

Signal Claims (Continued)

- *In re Breslow*, 205 USPQ 221 (CCPA 1980)
  - Opinion:
    - PTO's objection was that the compounds, being unstable, cannot be isolated. Lays down as a prerequisite to being "statutory subject matter" that "appellant must enable one to obtain the compounds in a reasonably *stable* form." That is to say, unstable compounds are not "compositions of matter" under Section 101.
    - CCPA found that the requirement that compositions of matter be stable is not read into Section 101; many compounds may find their greatest or even their sole utility in the fact that they are not stable. The preferred manner of using them is to produce them in situ, whereupon they exhibit their cross-linking activity, their only disclosed utility.

Signal Claims (Continued)

- Signal claims are:
  - Manmade and tangible in sense that they can be
    - Sensed
    - Measured
    - Put to useful purpose
    - Meet Supreme Court's definition of manufacture
      - "The production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties or combinations, whether by hand-labor or by machinery."

Signal Claims (Continued)

- Signal claims are:
  - Capable of affecting operation of the computer by adding new functionality
  - To be evaluated using test set forth in Arrhythmia Research Tech. v. Corazonix Corp. (958 F.2d at 1057, 22 USPQ2d at 1036), re: significance of activity which computer is caused to perform.
    - "It is of course true that a modern digital computer manipulates data, usually in binary form, by performing mathematical operations, such as addition, subtraction, multiplication, division, or bit shifting, on the data. But this is only *how* the computer does what it does. Of importance is the significance of the data and their manipulation in the real world, i.e., *what* the computer is doing."

Signal Claims (Continued)

- Signal claims are:
  - Just as much computer elements as software
    - Much like other computer elements routinely patented

Computer-Readable Medium Issues

- Shouldn't fixate on what medium is
- Answer question of whether functionality of software can be realized
  - If disembodied, answer is "No" (cf. *Warmerdam*)
  - If embodied, answer is "Yes" (cf. *Lowry* and *Warmerdam*)

Computer-Readable Medium Issues (Continued)

- Analyze underlying process that software performs for patentable subject matter. Answer these questions:
  - What is function that software performs?
  - What is significance of function?
  - Is function an abstract idea, law of nature, natural phenomenon? (cf. *Abele, Walter, Schrader, Grams, Warmerdam*)
  - Does function employ technology?
    - However, cf. *Musgrave,* re mental steps doctrine
    - Claims are usually drawn to computer implemented processes
  - Is function useful?
    - Operable?
    - Has real world value?
    - Provides immediate benefit to public?

Thank You

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